JAPANESE PATENT OFFICE
PATENT JOURNAL
KOKAI PATENT APPLICATION NO. HEI 5[1993]-129516

Technical Disclosure Section

| | |
|---|---|
| Int. Cl.[5]: | H 01 L 25/065<br>25/07<br>25/18<br>H 01 L 25/08 |
| Sequence No. for office Use: | 7220-4M |
| Application No.: | Hei 3[1991]-287635 |
| Application Date: | November 1, 1991 |
| Publication Date: | May 25, 1993 |
| No. of Claims: | 4 (Total of 6 pages) |
| Examination Request: | Not requested |

# SEMICONDUCTOR DEVICE

Inventors: Yoshiaki Ei
Hitachi Seisakusho K.K., Device Developmental Center, 2326 Imai, Oume-shi, Tokyo-to

Mikinori Kawaji
Hitachi Seisakusho
K.K., Device
Developmental Center,
2326 Imai, Oume-shi,
Tokyo-to

Applicant: 000005108
Hitachi Seisakusho K.K.
4-6 Kanda surugadai,
Chiyoda-ku, Tokyo-to

Agent: Shuuki Akita,
patent attorney

[There are no amendments to this patent.]

Abstract

Objective

To increase the mounting density, attempt to increase the operation speed, and to increase the yield in a semiconductor device, in which semiconductor pellets are mounted over the mounting surface of a base substrate (5).

Constitution

In the aforementioned semiconductor device, a semiconductor pellet (1), which has a logic circuit system mainly constructed from a bipolar transistor (single active element), is mounted over the mounting surface of the base substrate (5), a semiconductor pellet (3), which has a memory circuit system

mainly constructed from a complementary type MISFET (single active element), which is different from the active element of said logic circuit system, is mounted over the logic circuit system of said semiconductor pellet (1) in a manner in which said memory circuit system and the logic circuit system of the semiconductor pellet (1) oppose each other, and the logic circuit system of the aforementioned semiconductor pellet (1) and the memory circuit system of the semiconductor pellet (3) are respectively connected electrically with the inclusion of bump electrodes (10).

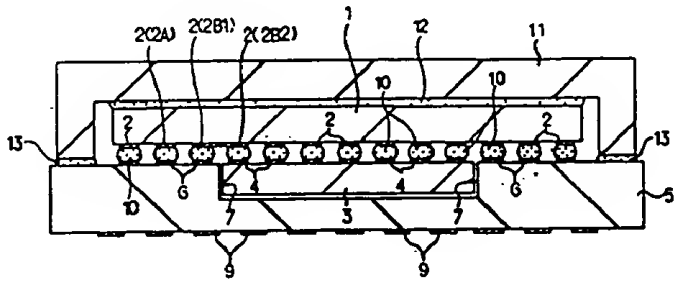


Figure 1

Claims

1. A semiconductor device, in which semiconductor pellets are mounted over the mounting surface of a base substrate, a primary semiconductor pellet, which has a primary circuit mainly constructed from a single active element, is mounted over the mounting surface of the base substrate, a secondary semiconductor pellet, which has a secondary circuit mainly constructed from

another single active element, which is different from the active element of said primary circuit, is mounted over the primary circuit of said primary semiconductor pellet in a manner in which said secondary circuit and the primary circuit of the primary semiconductor pellet oppose each other, and the first circuit of the aforementioned primary semiconductor pellet and the secondary circuit of the secondary semiconductor pellet are respectively connected electrically with the inclusion of bump electrodes.

2. The semiconductor device described in Claim 1, characterized by one of the primary circuit of the aforementioned primary semiconductor pellet or the secondary circuit of the secondary semiconductor pellet being constructed mainly from a bipolar transistor, and the other being constructed mainly from a MISFET.

3. The semiconductor device described in Claim 1 or 2, characterized by the primary circuit of the aforementioned primary semiconductor pellet and the secondary circuit of the secondary semiconductor pellet respectively being supplied with a power source independently from the aforementioned base substrate side.

4. The semiconductor device described in any one of Claims 1-3, characterized by having one of the primary circuit of the aforementioned primary semiconductor pellet or the secondary circuit of the secondary semiconductor pellet, which has a larger quantity of heat that is generated through the circuitry operation mounted over the mounting face of the base substrate closer to the cooling system than the other, which has a smaller quantity of heat that is generated.

* * *